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| **Module 3 Review Exercise** |
| 1. In a 7-segment display, what is the active component that makes the display readable when the microcontroller sends a HIGH or LOW signal?   **LED**   1. What does common cathode mean?   **Common cathode means that all the cathodes are connected together, i.e., they share a common connection point.**   1. Write an OUTH command to set P8, P10, P12 high and P9, P11, P13 low. Assuming all your I/O pins started as inputs, write the DIRH command that will cause only the I/O pins mentioned as outputs.  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | pin | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | | OUTH | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |   **OUTH = % 00010101**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | pin | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | | DIRH | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |   **DIRH = % 00111111**   1. Complete the table below by writing the values of OUTH required to display the letters given:  |  |  |  |  | | --- | --- | --- | --- | | **Letter** | **LED Segments** | **BAFG.CDE** | **OUTH Value** | | C | **A,F,E,D** | **0 1 1 0 0 0 11** | **%01100011** | | d | **B, C, D, E G** | **1 0 0 1 0 1 11** | **%10010111** | | F | **A, F, E, G** | **0 1 1 1 0 0 01** | **%01110001** | | S | **A F G C, D** | **0 1 1 1 0 1 10** | **%01110110** | |

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| 1. To display digit ‘9’ on the 7-segment display, identify the segments and pins that must be HIGH. Write your answers in the table below. | |
| |  |  | | --- | --- | | **Segment** | **Pin** | | **A** | **7** | | **B** | **6** | | **C** | **4** | | **G** | **10** | | **F** | **9** | |  |  | |  |

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| 1. In the following command, if the Item = 75, what will be the value of Index?   **LOOKDOWN Item, [11, 32, 15, 75, 243], Index**  **INDEX = 4**     1. How many 7-segment displays are present in the display shown in the figure below.     **5 SEVEN SEGMENT DISPLAYS** |
| 1. The figure below shows the connection of a 7-segment display. What will be the number displayed?     **HERE D = 1 C= 1 B= 1 A =1 G = 1**  **The number displayed is 3**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| 1. The figure below shows the connection of a 7-segment display. Write a program below to display digit “9” for one second and then switch off the 7-segment display. Hint: Use DIRH and OUTH commands. |

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